

# Systems

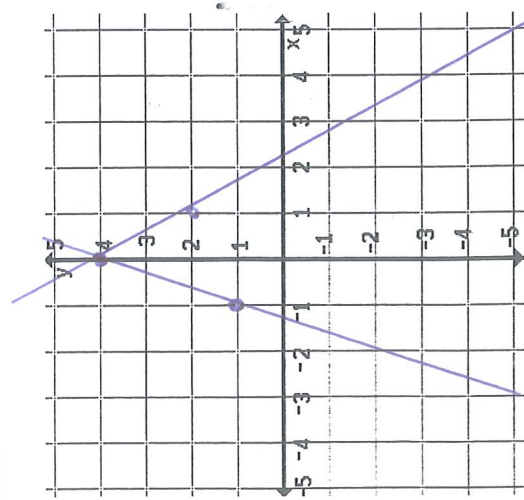
Consistent

Inconsistent

Independent

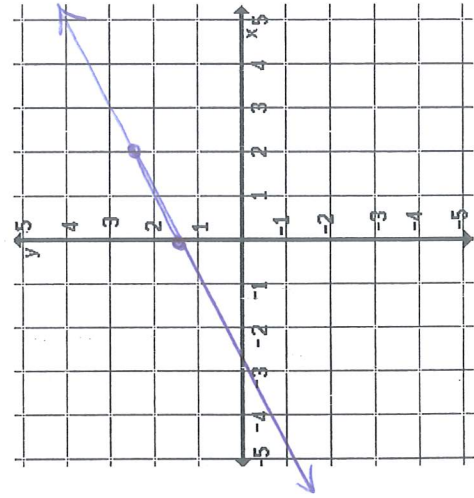
Dependent

A system that has exactly one solution.  $\begin{cases} y = 3x + 4 \\ y = -2x + 4 \end{cases}$



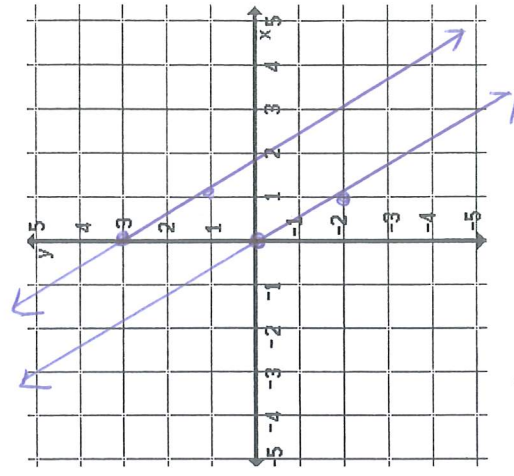
Solution:  $(0, 4)$

If a system has infinitely many solutions.  $\begin{cases} -x + 2y = 3 \\ 2x - 4y = -6 \end{cases}$   
 $2y = x + 3$   
 $y = \frac{1}{2}x + \frac{3}{2}$   
 $-4y = -2x - 6$   
 $y = \frac{1}{2}x + \frac{3}{2}$



Solution: Infinitely many solutions

If a system does not have a solution.  $\begin{cases} y = -2x \\ 4x + 2y = 6 \end{cases}$   
 $2y = -4x + 6$   
 $y = -2x + 3$



Solution: No solutions

Without graphing you can determine the type of system:

- 1) Different slopes  $\Rightarrow$  Independent
- 2) Same slope and same y-intercept  $\Rightarrow$  Dependent
- 3) Same slope and different y-intercept  $\Rightarrow$  Inconsistent